

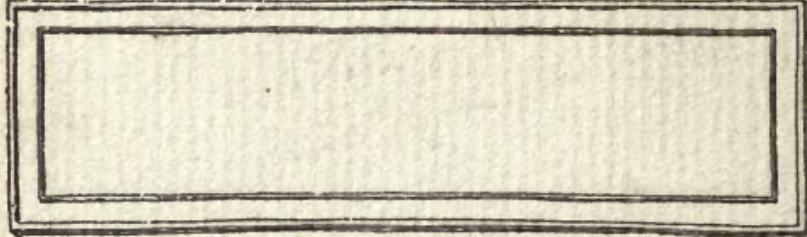
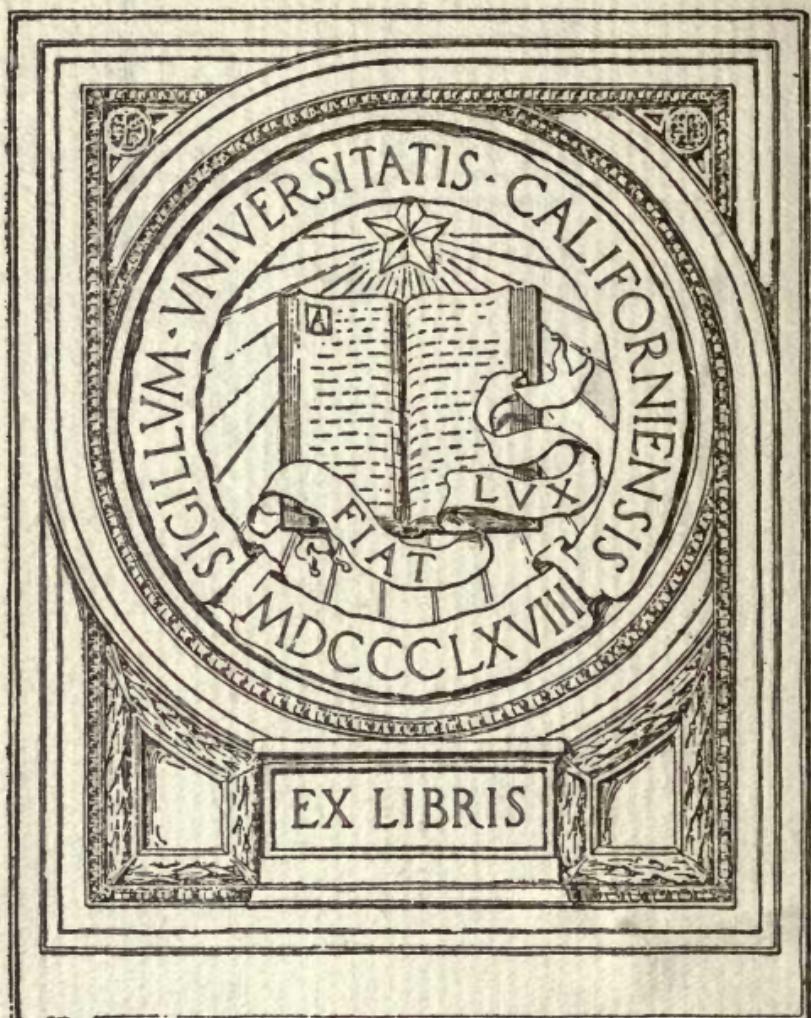
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RUBBER

What it is
and
how it grows.



Dedicated to the
University of California
Berkeley,
By Rollin J. Van Houten,
San Francisco, Calif.
Dec 3/1927

R U B B E R

WHAT IF IS AND HOW IT
GROWS

BLOSSOMS

SEEDS

PLANTING

TAPPING

LATEX

COAGULATING

CLEANSING

VULCANIZING

ON

LA ZACUALPA

Copyright 1908
By JOHN W. BUTLER

Replacing 173499



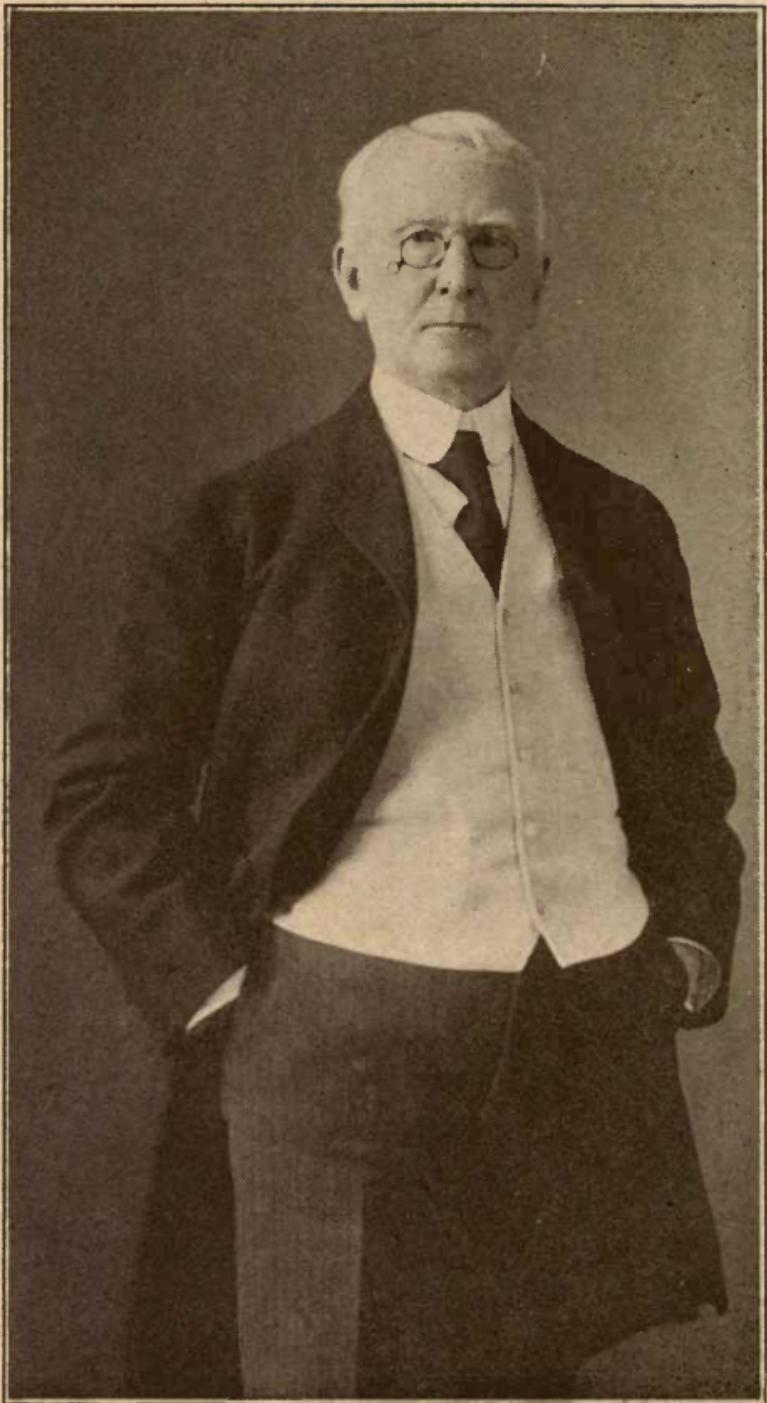
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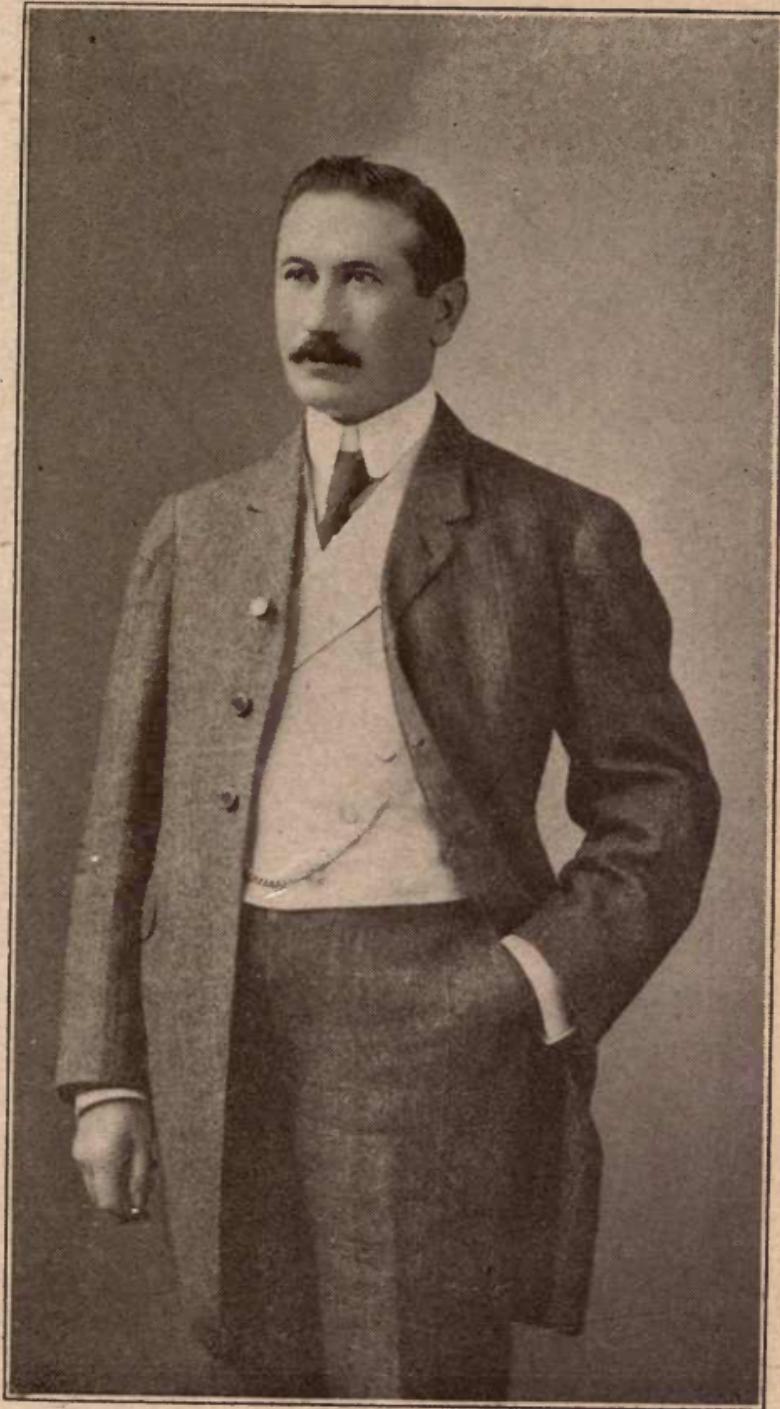
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JOHN W. BUTLER, President

A student of Industrial Conditions, who foresaw the great future which the increasing demand for Rubber insures to the Planter, and organized the first successful Rubber-growing industry in Mexico.



O. H. HARRISON, Resident Director

A successful Coffee and Rubber Planter. The great success of the Zacualpa Properties is due entirely to his efficient management and places him in the first rank of Rubber Cultivators.

RUBBER CULTIVATION

Is a new industry, and is becoming one of the leading industries of the world.

At no period has there been a greater demand for rubber than at present, and new fields are constantly opening for the consumption of this wonderful product of nature.

As the supply obtained from wild trees is decreasing, the cultivation of rubber is a necessity, and the subject is attracting the attention of scientific minds as well as those of a practical business nature.

It was not until many years after the discovery of rubber that its great value and many uses were realized. For two centuries the people of Europe regarded the elastic substance used in games among the natives of tropical America as a curiosity and nothing more. From the Aztec, however, the Spaniards learned to smear it on their coats to keep out dampness, little dreaming that in time it would become as valuable as the gold they had crossed the seas and undergone hardships to obtain.

Foreword.

The first and second editions of this little book were so well received by educators all over the country that we have concluded to issue a revised edition giving the latest results of our experience in the cultivation of rubber on

LA ZACUALPA RUBBER PLANTATION.

The facts it contains, together with the description of the country and conditions necessary to the successful cultivation of rubber, are given to the public so that the details of this new and most interesting industry may be more fully understood.

Those who desire to increase their store of knowledge are invited to give these pages careful consideration.

Since the first edition was issued rubber has advanced in price, with every prospect of its going higher, and the attention of the business world is more than ever turned to this profitable industry.

This book is dedicated to the young people of our public and private schools, with the hope that the matter it contains will be found interesting as well as instructive.

RUBBER IN ITS INFANCY

Before the discovery of America the natives played ball with elastic globes made from the gum of the rubber tree, which they called hule, but it was not until 1770 that the product was put to practical purposes in a civilized country.

One of the earliest notices of rubber as a useful commercial article was by Dr. Joseph Priestley. He found it for sale in half-inch cubes and recommended it as a good eraser of lead pencil marks, and it is from this early use of the gum that it obtained the name it still bears.

In 1823 a Boston sea captain brought to our country a thick, clumsy pair of rubber shoes, which excited much interest. They were made by the natives along the Amazon, and two years later were followed by 500 pair, which sold readily at \$3.00 and \$5.00 a pair. During the next fifteen years probably over 1,000,000 pair were brought to this country and sold at the same price. Up to this time, the specimens of gum elastic, as it was then called, brought here by sea captains, had been looked upon simply as a strange product of a distant land.

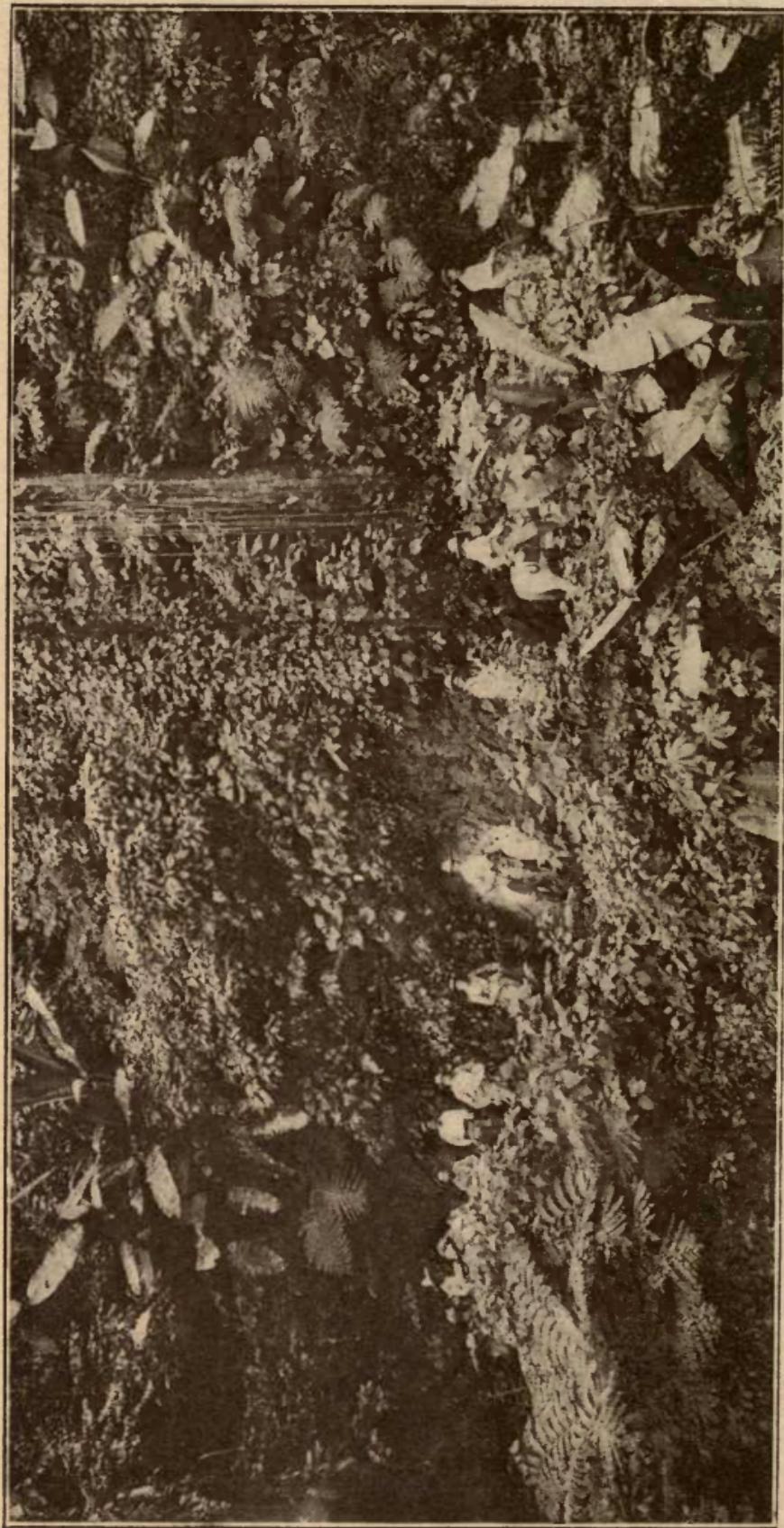
CULTIVATION OF CASTILLOA ELASTICA IN MEXICO.

Lands suitable for the production of rubber in Mexico are situated in the States of Vera Cruz, Tabasco and Chiapas, and some portions of Oaxaca, and for the successful production of rubber the elevation above sea level should not exceed 500 feet.

The low bottom lands on the coast line are decidedly the best, the soil being of great depth, having been formed by the deposits left there by the overflow of the various rivers running through these sections.

In selecting land for a rubber plantation, it is preferable to choose entirely virgin forest and not land that has been previously under any kind of cultivation. It is necessary to see that the land is capable of perfect drainage, and also that it can be protected from the overflow of rivers.

There is no difficulty in finding land 500 feet above sea level which is rolling and broken and on which no drainage works would be necessary, but experience has shown us that the flat, bottom lands, when successfully drained, produce much better results than the rolling and broken land.



La Zacualpa as it was—a dense, unbroken jungle

La Zacualpa as it is—a beautiful forest of Rubber Trees. The same men who wrought this transformation are now developing Los TOCAYOS RUBBER PLANTATION, which adjoins La Zacualpa



RUBBER AND ITS COMPOSITION.

Rubber is a product obtained from the milky juice of various trees and vines peculiar to the Tropics.

It is composed of minute globules suspended in a liquid in the form of an emulsion, containing albuminoids and a resinous substance. These turn black when exposed to the air and light.

In this process the globules of rubber come together quickly, and gain the elasticity which constitutes its value.

After coagulation takes place, the albuminoids and resin remain in the rubber produced, while the liquor is evaporated.

This product is sometimes called caoutchouc, also gum elastic and India rubber.

WHERE IT COMES FROM.

India rubber, or caoutchouc, is obtained from several varieties of trees, shrubs and vines, nearly all of which are indigenous to the Tropics. South America, Central America, India and Africa each furnish large quantities, the gum produced being all rubber, differing somewhat in its character, due largely to the various methods of gathering and coagulation.

Para rubber (*Hevea brasiliensis*).—What is known as the Para rubber of commerce is ob-

tained from the vast regions drained by the Amazon and its tributaries, estimated to embrace a territory nearly two-thirds the size of Europe.

The Mexican rubber tree, growing in the district of Soconusco, on the shores of the Pacific, has been named *Castilla Lactiflua*; Castilla, in honor of Castillo, a Spanish botanist, who died in 1793, while engaged in the preparation of a flora of Mexico; and Lactiflua, signifying flowing milk, distinguishing it from trees in other localities, from which the milk exudes but does not run freely.

This tree, however, is known generally as *Castilloa Elastica*, commercially placed under the head of "Centrals," next in quality to Para, far more productive in quantity, and of all rubber trees responding most readily to cultivation.

The world's supply of rubber has up to this time been drawn almost wholly from the wild trees found growing in the dense depths of tropical forests; but owing to the destructive methods of gathering pursued by the natives, millions of trees have been destroyed, to replace which will require the yearly planting of thousands of acres.

LA ZACUALPA RUBBER PLANTATION.

La Zacualpa Rubber Plantation is, without doubt, the foremost of its kind in Mexico, and for depth of soil, requisite rainfall, systematic drainage and intelligent management has not its equal in the world.

It is situated between the towns of Huistla and Escuintla, about twenty miles from the Pacific Ocean, and on the Pan-American Railroad, which connects Tapachula with the Tehuantepec Railroad at San Geronimo. This road has already reached Tapachula and will be pushed on through Central America to a connection with the railroads of South America.

In a report lately made by four gentlemen who visited the property it is stated: "The whole Plantation is a pleasure to behold."

The planted trees are easily accessible at all points by avenues running for miles; these have been named and are crossed by streets that are numbered; the visitor can ride for miles through groves of healthy rubber trees, the branches of the older trees arching overhead.

At the present writing some 10,000 acres are planted, or about ten times the area of Golden Gate Park, San Francisco.

CASTILLA LACTIFLUA.

In a letter received from Mr. O. F. Cook of the Agricultural Department, Washington, he says: "You will doubtless be interested to know that I have recently described the Soconusco rubber tree as a distinct species, under the name, *Castilla Lactiflua*.

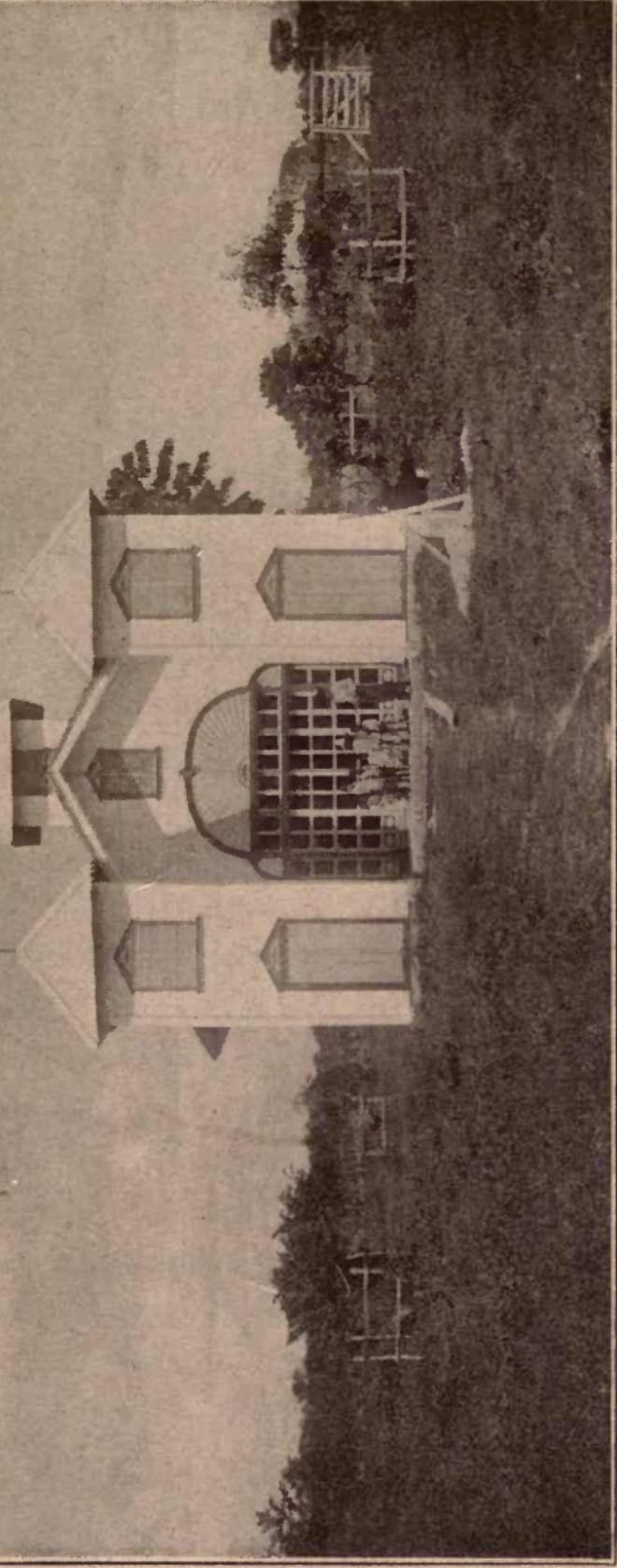
"The Castilla of the Soconusco District of the State of Chiapas (*C. Lactiflua*), is peculiar in having the complemental inflorescence flattened and with a broad mouth; it is very similar to the primary, except in the smaller size.

"The specific name alludes to the fact that the milk of the tree flows freely when the bark is cut, so that it can be collected in quantity and coagulated by improved (creaming) methods, instead of the rubber being harvested wholly or partly by pulling the 'scrap' (*burucha*) from the gashes in which it has dried."—From Science, No. 457.



A Home in the Tropics—the Manager's Residence
on La Zacualpa Rubber Plantation

The Church on La Zacualpa—services are held on alternate Sabbaths by an itinerant Preacher



THE STORY OF CASTILLOA ELASTICA ON LA ZACUALPA.

The Department (or County) of Soconusco, in the State of Chiapas, one of the twenty-seven States forming the Republic of Mexico, is the natural home of the *Castilloa Elastica*, or Mexican rubber tree, as is proved by the great number of wild rubber trees which grow spontaneously in its forests.

In their wild state they grow tall and lank, reaching a height of over fifty feet and a diameter of twelve to eighteen inches.

As far as known the trees are long-lived, and increase their output of latex yearly, until as many as twenty-five pounds of crude rubber have been taken from a tree in a single season.

It is only within a few years that attention has been called to the cultivation of this tree.

During the years 1889 and 1890 a grove of some 5,000 of these trees was planted on La Zacualpa, a plantation in the above Department, which trees are now on an average eighteen to twenty inches in diameter and forty to fifty feet in height, and are yielding about two and one-half pounds of rubber to the tree. They stand about 400 to the acre and are in prime condition.

These are the trees referred to by Mr. O. F. Cook, on page 76, Bulletin 49, issued by

the United States Department of Agriculture, as follows: "The planted trees at La Zacualpa abundantly demonstrate the practicability of rubber culture."

The successful production of rubber and growth of these trees, combined with their present healthy state, has proved the fact that *Castilloa Elastica* can be easily cultivated in its native habitat, with large profits.

Cultivated trees are raised from the seed, and begin to yield milk during the sixth year from date of planting.

The trees have no natural enemies, as, by reason of the quantity of resin and albuminoids contained in the milk, they are not molested by worms, insects, birds or animals. During the first few months of the tree's life, when the stock is in a watery state, it is subject to attack by gophers, against whom warfare is waged; as growth continues the flavor changes and becomes distasteful, thus rendering the tree immune.

Owing to the successful conditions noted above, this plantation has been extensively developed, and under the care of expert rubber cultivators about 3,000,000 rubber trees are growing vigorously.

The cultivation of rubber is a new enterprise, calling for the most careful study, and is a notable addition to the world's varied industries.

Consequently, the questions of soil, rainfall and climatic conditions must enter largely into the calculations of those contemplating its future.

The rubber tree requires a rich loam soil; warm, moist climate; low altitude; a large and evenly distributed rainfall, and perfect drainage.

All these conditions exist at La Zacualpa.

Numerous rivers and creeks descending from the Sierra Madre Mountains constitute a most complete drainage system for this district.

The rain record, taken daily by the British Vice-Consul, R. O. Stevenson, has averaged 160 inches for many years past.

The climate of Soconusco is pleasant and healthful, and the landscape enchanting. Lying between the Pacific Ocean and the Sierra Madre Mountains, the extreme heat is tempered by both ocean and mountain breezes.

In the lowlands, where the rubber tree grows, game is plentiful and the streams abound with fish, furnishing enough food for thousands of families.

Running down the whole coast from the Isthmus of Tehuantepec to the Frontier of Guatemala is a series of lagoons called esteros.

Emptying into these lagoons are two navigable rivers, the Despoblado and Vado Ancho, which run through the property. This marvelous

waterway is one of the great features of Zacualpa, making it independent in the matter of transportation, as the port of San Benito can be reached by this route.

The plantation consists of 18,791 acres of land, of which 12,000 acres have been set apart as La Zacualpa Rubber Plantation and are now being planted with rubber trees.

The management is entrusted to one superintendent, two major-domos, or sub-managers, and one corporal to every thirty men.

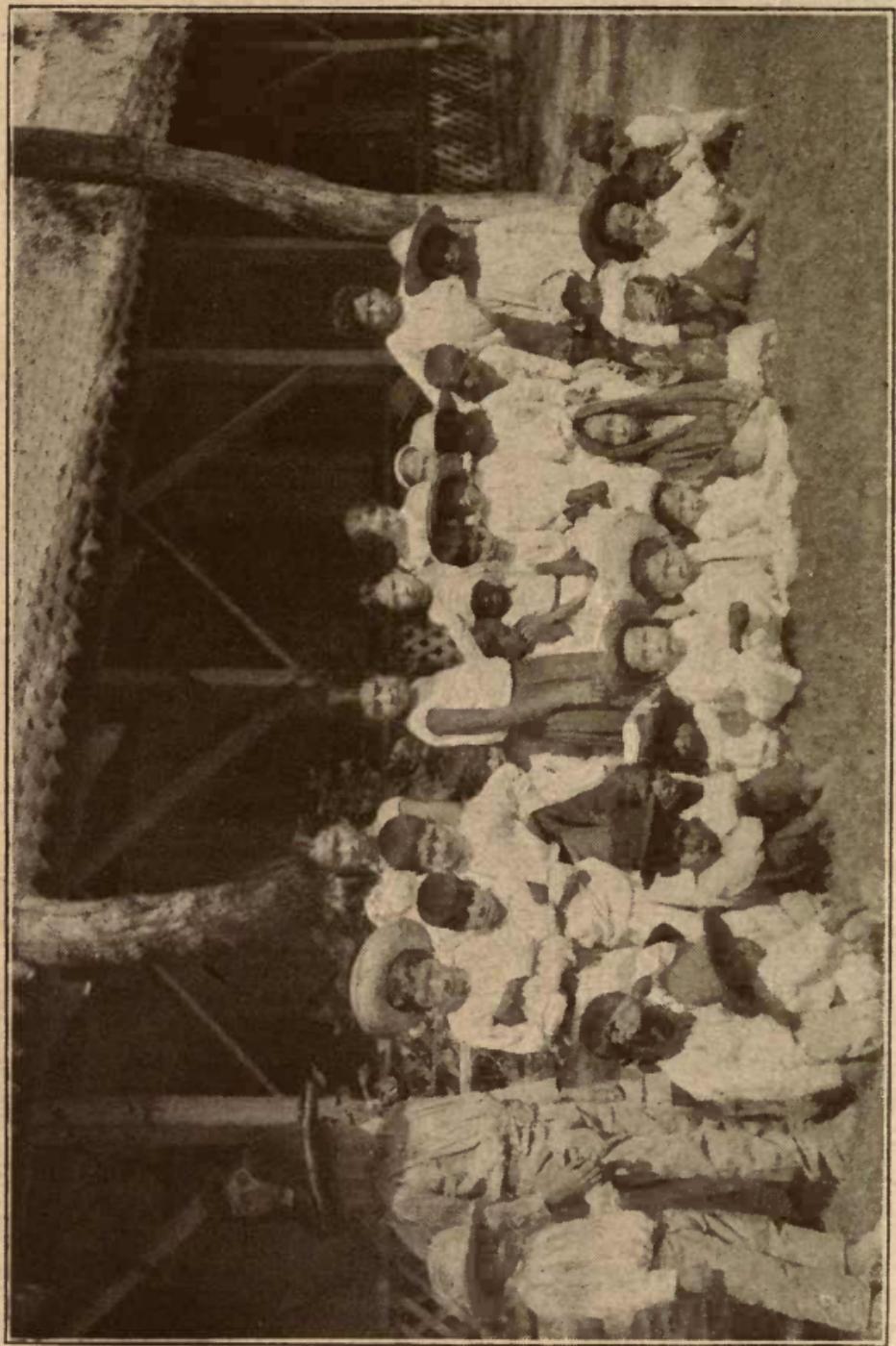
During the planting season about 300 men are employed, with ten corporals.

All the planting is done under the supervision of rodmen who have formerly worked with engineers, and the lines outlining the planted squares and avenues between are run with great care.

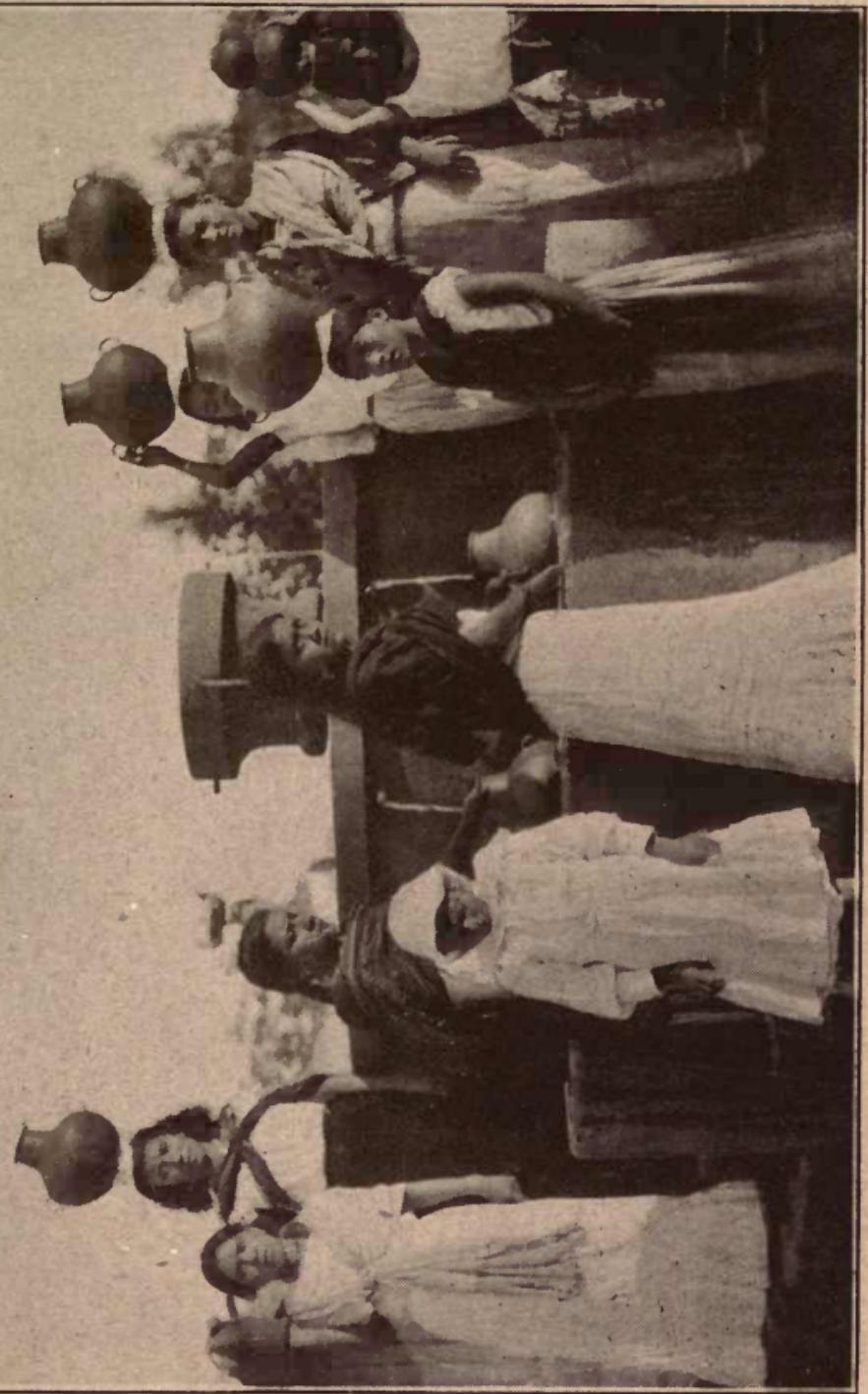
Each man begins his day's task at four A. M., all assembling in the patio, or yard, in front of the manager's house.

The major-domos receive their instructions from the manager and communicate them to the corporals, who in turn direct their men, regarding the work of the day; and are responsible for the performance of their respective duties.

The bell, which can be heard in all parts of the Plantation, announces the noon hour, when



A group of
School Children—
La Zacualpa
Rubber
Plantation



Water Carriers at
the Fountain—
La Zacualpa
Rubber
Plantation

work ceases. The after part of the day, too hot for work, is given to a siesta; while the evening is devoted to social intercourse and to music. Love of music is universal among these people; and the Company has found it profitable to cultivate this taste among its workers, since it adds to their contentment and attaches them to the Plantation.

As we were fortunate enough to have among our staff one who had formerly been a band master, and as he kindly offered to organize and train the natives if the Company would furnish the instruments, a band was formed and instruments purchased; the band as formed is composed of twenty-five pieces; its members are mostly very young persons, one and all of whom have found the greatest delight in their musical work; while the whole village is greatly entertained by the musicale given almost every evening. Beside the brass band, a native instrument, the Marimba, is very popular. Music completes the rounds—at nine o'clock all lights go out and the day is done.

Everything is done in the most systematic manner, and the plantation is kept clean and in good order at all times.

The supplies needed are furnished from the company's store, and a large bake oven is pro-

vided for the use of the laborers. Generally four or five women do all the baking, and sell bread to those wishing to buy.

The location of the plantation is an ideal one, level for the most part, but sufficiently rolling for good drainage, well watered, entirely free from stones and gravel, and has the reputation all through that country of being a very choice strip of rubber land.

The elevation at no point exceeds 400 feet, and at some places is as low as 100 feet.

La Zacualpa Rubber Plantation is a most interesting place, and improvements are constantly being made.

A sawmill is in constant use, preparing timber for the construction of permanent houses for the native laborers and other buildings for the Company's use.

Excellent tiles have been made from clay found on the plantation, and are used in roofing buildings.

The picturesque dress of the native women engaged in their household duties, the white uniform of the workmen as they come and go on various errands, and the numerous children engaged in their sports, form an ever-varying picture of contentment and well directed labor.

The domestic animals comprise a fine herd of over 1,000 cattle, some sixty horses and

cargo mules for work and carrying rubber, twenty yoke of oxen, with sheep, goats, poultry and pigs.

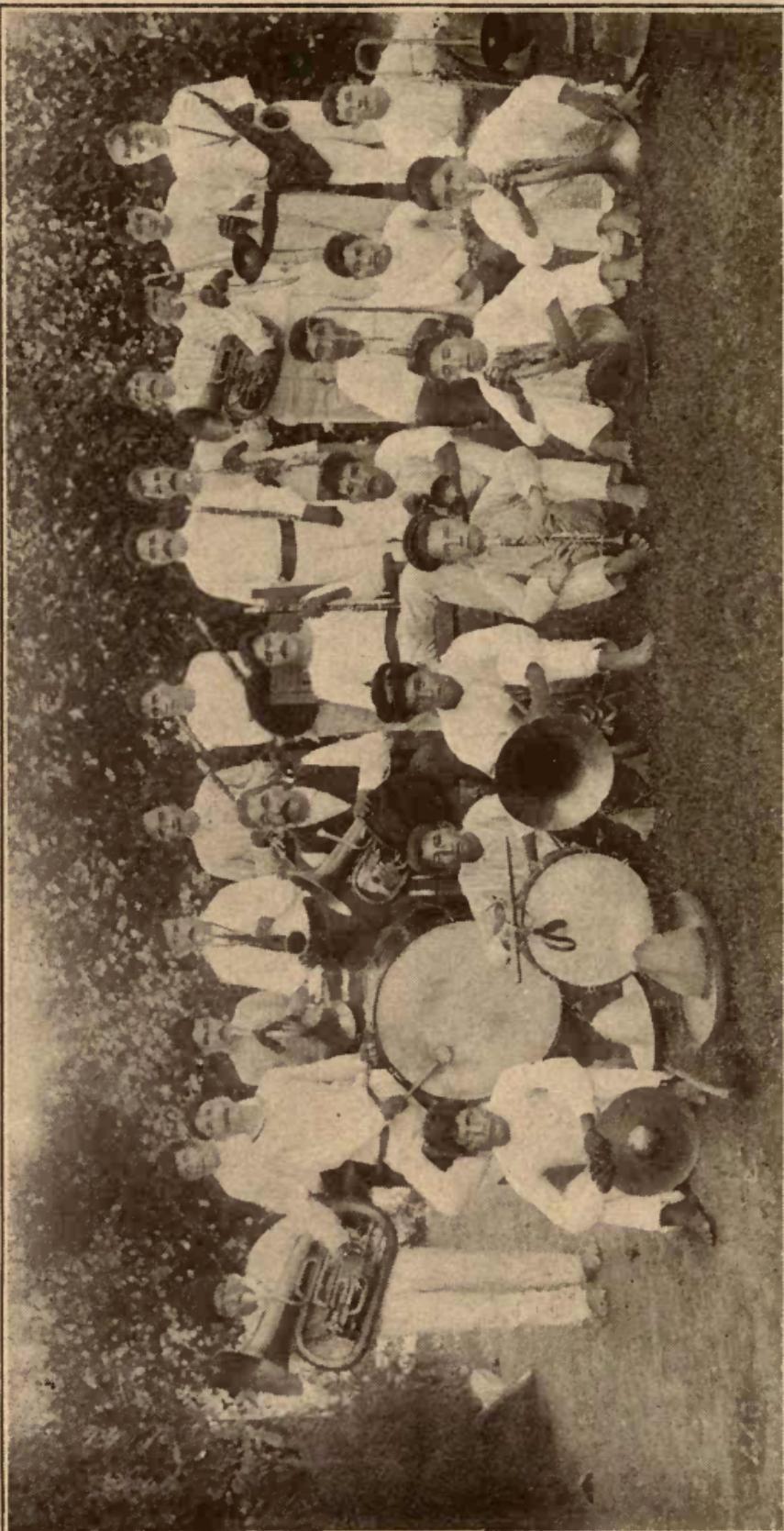
Numerous dogs and monkeys are on friendly terms, and an endless chatter is kept up by the parrots, macaws and other bright-plumaged birds that contribute to the life of this quaint plantation village.

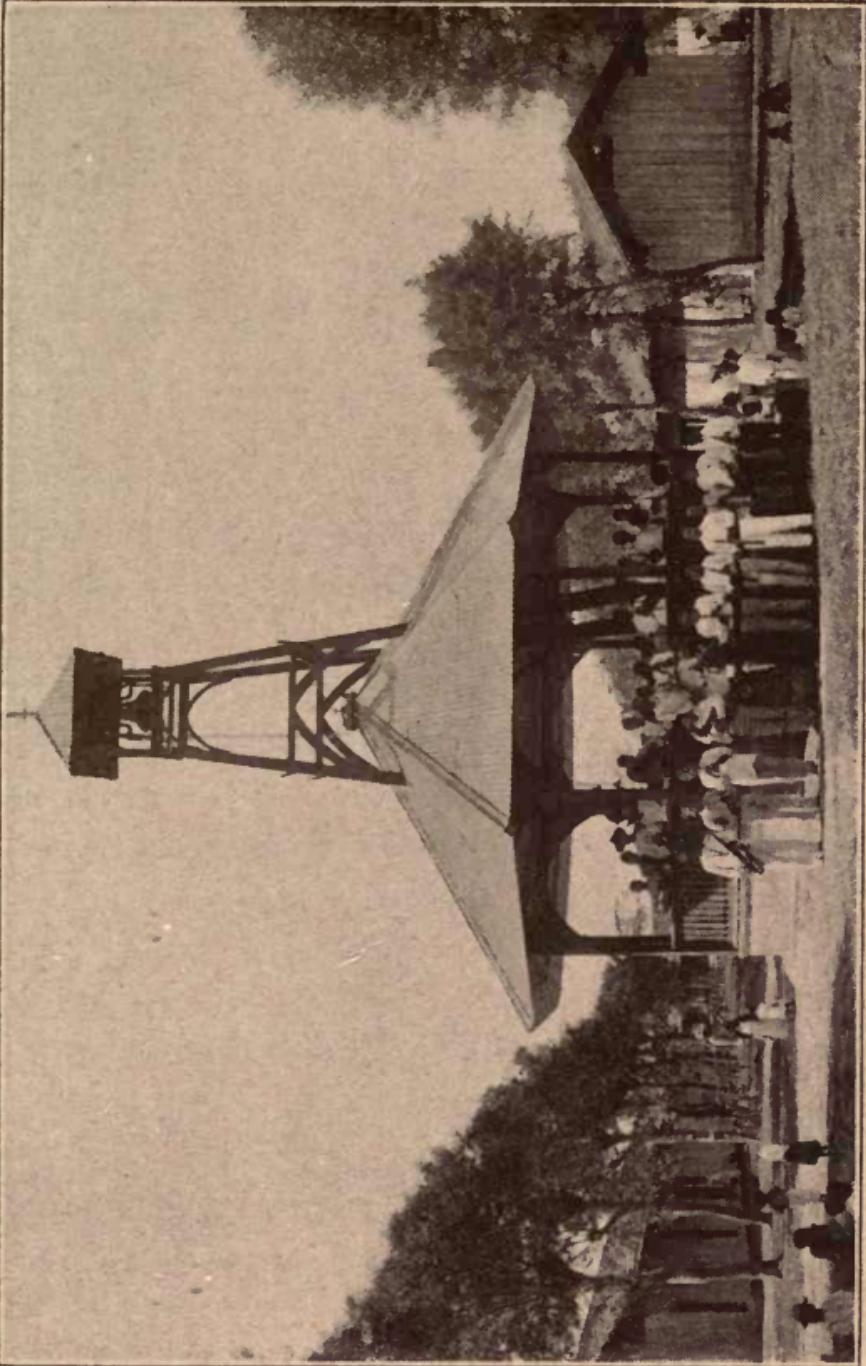
The population on the Zacualpa Properties, including men, women and children, is over 1,500. In building homes for these people the same plan has been carried out as that generally employed in Mexican towns, the buildings being situated on plazas, or squares.

Owing to the fact that a continuous stream of visitors is arriving at our plantation from all parts of the world, a small hotel has been erected for the accommodation of strangers, as their entertainment at the administration building has become a burden.

Blossoms
Seeds
Planting
Old Method of Tapping
New Method of Tapping
Latex
Coagulating—Native Method
Cleansing
New Way of Preparing Rubber
Vulcanizing

The Zacualpa Brass Band—music is the chief delight of the population on the Zacualpa Properties





The Zacualpa
Band-Stand—
the Plantation
Bell in the
Tower

BLOSSOMS

The *Castilloa Elastica*, or Mexican rubber tree, is between five and six years old when it blooms. Before blooming the tree sheds its leaves. The blossoming season begins in January and continues until April.

Clusters of small, whitish blossoms first put forth, and three weeks later the tiny petals fall, leaving a little green center which gradually enlarges, and is filled with seed points sticking fast to a round disk.

The blossoms are as numerous as the leaves, and each one has at least twenty seeds about the size of an ordinary bean.

When the blooming and seeding time is over the trees put forth new leaves.

SEEDS.

The seeds are encased in a shell which is hard while green, but it soon softens into a sticky substance like fish gelatine. The first turning in the ripening process is to a sickly yellow, which gradually changes to a bright red.

As soon as the seeds are ripe, with the first rains, they begin to fall. This is a busy time on the plantation. The seeds literally cover the ground underneath the trees, and the laborers gather them into sacks and carry them to the nurseries.

There they are dumped into pails filled with water and washed thoroughly to detach them from the discs and rid them of the enveloping gelatine substance. When the seeds have been ripe sixty days they will no longer germinate, and to get the best results they should be planted immediately after washing, which is done to facilitate handling and prevent them from germinating in the gelatine coating.

PLANTING.

There is some difference of opinion among planters as to the best methods of planting, some advocating partial shade, and again some would plant from a nursery previously formed, and others with the seed at stake. Difference of local and climatic conditions is no doubt the cause of this diversity of opinion, as each section calls for different methods.

The method adopted on La Zacualpa and that which has been productive of the best results in that locality is the following:

The land is first surveyed into squares of thirty-three acres each, which includes avenues and roads twenty-four feet wide between them.

The roads run in straight lines and are cleared of all trees and shrubs, thus making them available for the use of the workmen and inspection of the plantation.

The roads running north and south are called avenues, and those east and west streets, the former being named and the latter being numbered.

These roads are now several miles long, and in order to facilitate transportation of the labor to various parts of the plantation, the Company is about to put in a small electric railroad.

The land is cleared by cutting down the forest and is then burnt off.

After the burning the land is staked out to allow for 400 trees to the acre. A small mound of earth is made at each stake, and the rubber seeds are imbedded therein.

The seed will germinate in from eight to fifteen days, and one month from the time of planting the plant attains a height of about eight inches, and its growth from this time on is rapid and may roughly be put down as one foot per month. Our three-year-old trees are over thirty feet high, and those of four years about thirty-five feet.

After the planting has been done, great care is taken that the forest growth does not choke out the young tree. This growth is kept down continually, thus giving the young rubber tree a good start until it is able to take care of itself, which it can do two years after planting, after which time it requires very little attention.

OLD METHOD OF TAPPING.

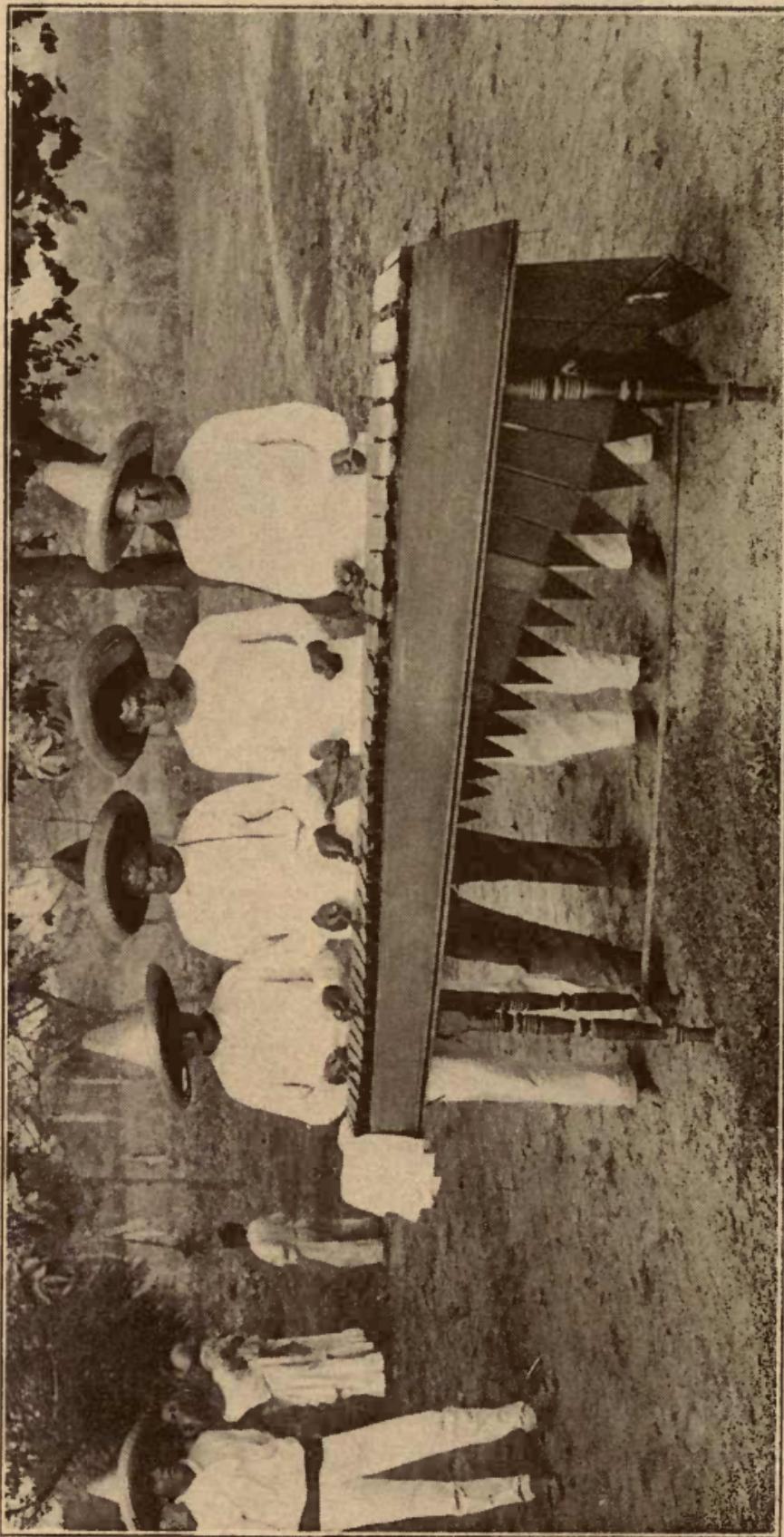
The native Indian method of tapping is as follows: Before beginning to tap, a place is selected on the tree, preferably on the inclined side, and a hole made in the ground below, lined with a wide green leaf.

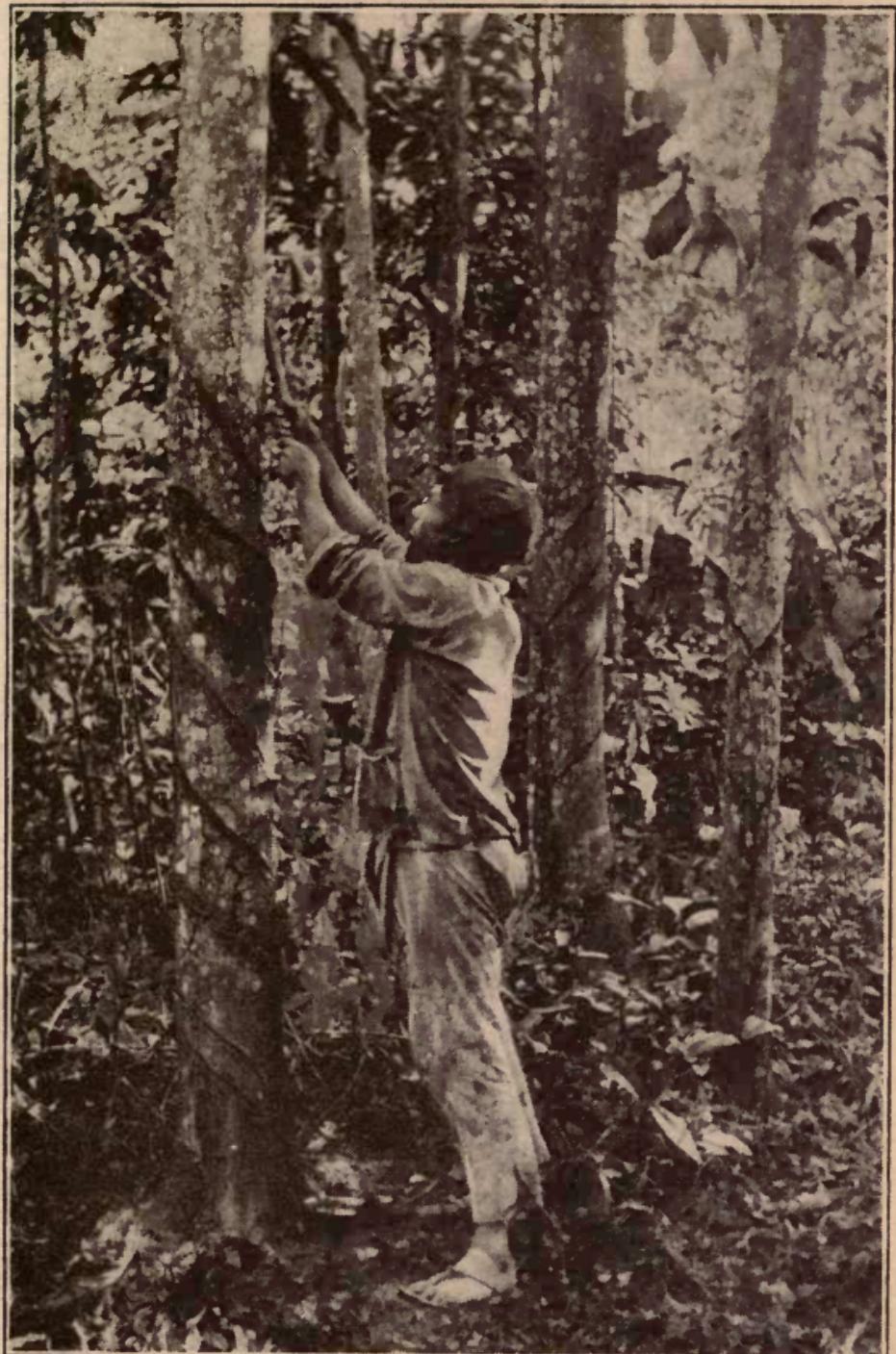
The tapper makes two incisions with his machette at right angles, coming together in the center. This is done to ascertain where the milk runs best.

Once decided, the tapper makes a narrow incision at the point of convergence and improvises a funnel of the same leaf used in lining the hole in the ground. This acts as a conduit for the milk, which runs from the tree in a steady stream into the hole until it coagulates along the line of incision, when, if desired, it is scraped off twice or more before the stream finally ceases. Very often the milk spurts out, and one could not stand close to the tree where the machete is at work without getting one's clothes spoiled. The rubber coagulates where it falls on the clothes, and will not wash out; only a solvent will remove it.

The bark of the tree is not only cut once, but at least four or five times, at intervals of two feet.

The Marimba—a native instrument from which beautiful music is produced. The one here shown was made by the Workmen on La Zacualpa Plantation, from native woods





The Hulero, or Rubber-gatherer, at work in the forest—
tapping the Rubber Trees with the Zacualpa
Tapping Tool described on page 36

The next year the angles cross each other giving the tree a peculiar criss-cross appearance.

Once the milk is flowing freely, the tapper leaves the tree and goes to another, repeating the process already described.

By the above method a dozen trees are considered an average day's work.

When the milk ceases to flow the tapper returns and carefully picks up the leaf in the hole and pours its contents into a large gourd. This is naturally a crude and wasteful process.

NEW METHOD OF TAPPING.

The modern method of tapping, as developed and employed on the Zacualpa Properties, is as follows: The hulero, or rubber-gatherer, is supplied with a Tool invented and perfected on La Zacualpa Plantation, consisting of a stout handle, twenty inches long, at one end of which a U-shaped sheet of steel is fastened; just forward of this U, the curved portion of which is sharpened to a keen edge, a metal finger is depressed more or less, as desired, by an adjustable screw which runs through the handle; and the *set*, or *adjustment*, of this finger, which slides over the surface of the bark as the Tool is drawn across the tree, determines the depth of the cut made by the U-shaped knife which follows immediately behind the metal finger.

A deeper or shallower cut may be made according to the size of the trees which we are tapping and the thickness of their bark; and we can effectually guard against cutting *through* the bark and into the wood of the tree. The latex, or rubber-producing milk, flows in veins in the bark only, and is entirely distinct from the life sap of the tree which flows between the bark and the wood. It is impossible to avoid cutting into the wood when the machete is used, and it is from the machete's too deep cutting that injury to the tree results.

With our perfected Tapping Tool a smooth continuous channel is cut across the tree's trunk and a canal is made which cannot fail to conduct the latex to a receptacle placed to receive it; while the succession of hackings made with the machete are often *out of line* and much of the latex flowing along the cuts leaves the line of travel and is lost.

An ordinary workman operating with the Zacualpa Tapping Tool will tap from 50 to 80 trees per day; while, as already stated, a dozen trees are an average day's work with the machete.

LATEX.

The Latex, or milky juice of the bark of the rubber tree, is quite distinct from the sap which

circulates through the wood, and contains from 32 to 44 per cent of gum.

Pure rubber milk is white when it first runs from the tree, and closely resembles that of the cow; but in the drying process it gradually oxidizes and turns black.

COAGULATING—NATIVE METHOD

When the milk is brought in from the forest it is thinly spread on the long, palm-shaped leaves of the *oja blanca*, which have first been laid on the ground in the hot sun.

Toward the stem, where the milk lies thickest, it is necessary to stir it while drying; otherwise it would coat over thickly on the outside and be full of the residue fluid, bringing a less price in consequence.

When the leaves are coated evenly, a quarter of an inch thick, they are piled one above another and pressed hard enough to cause the rubber strips to adhere closely. Then, by a dextrous movement, the tough leaves are pulled off and the thin layers are rolled into slabs ready for packing.

CLEANSING.

The slabs of dried rubber are packed in bales of 150 pounds each, covered with the native-made matting, sewed up in sacks, shipped per steamer to various countries and sold to the rubber manufacturers.

The first process in the manufacture of crude rubber—necessary on account of its being prepared by the native method—is to pass the slabs through large corrugated steel rollers, water falling from a reservoir upon the rubber as it passes through. This is repeated a number of times until all the dirt and foreign matter is eliminated, and the rubber rolled into thin perforated sheets having a rough surface.

These sheets are from eight to twelve feet long, and eighteen inches wide.

They are then hung in the dry room, where they remain until all the moisture has evaporated. The rubber is then ready for the next process.

NEW METHOD OF PREPARING RUBBER FOR MARKET

We are now preparing our rubber by washing the latex in tanks, and after coagulating same, passing it through heavy steel rollers. The small sheets are then hung up to dry and afterwards baled and put into a hydraulic press. This press has a pressure of 1,500 pounds to the square inch, and makes solid blocks of rubber, each weighing 25 pounds.

Experiments are being made on the Plantation with a view to employing Centrifugals for the separation of the rubber from the latex; a small machine as a model is now working and

the results are very encouraging. The rubber separated in this manner is of excellent quality and free from foreign matter.

Until now it was generally assumed that the Central American rubber was of much inferior grade to that of Para. It has now been proved, however, that the actual difference is very slight, if there is any, and resolves itself into the question of the method of preparing it for market at the time of tapping.

As it is necessary to treat the latex as soon as possible after it is collected from the tree, receiving stations have been established on La Zacualpa, so as to avoid the transportation of the latex to any great distance.

VULCANIZING.

Rubber is prepared for Vulcanizing by putting the washed and dried rubber through hot rollers until it becomes a softened, homogeneous mass. The gum is then ready for mixing with the various ingredients and adulterants, including sulphur, that are to be incorporated with it. The mass is then again passed through hot rollers until a perfect mixture is obtained, rolled into whatever form is desired, and subjected to intense heat until Vulcanized.

The amount of adulterants mixed with the crude rubber governs the quality and value of the manufactured article.

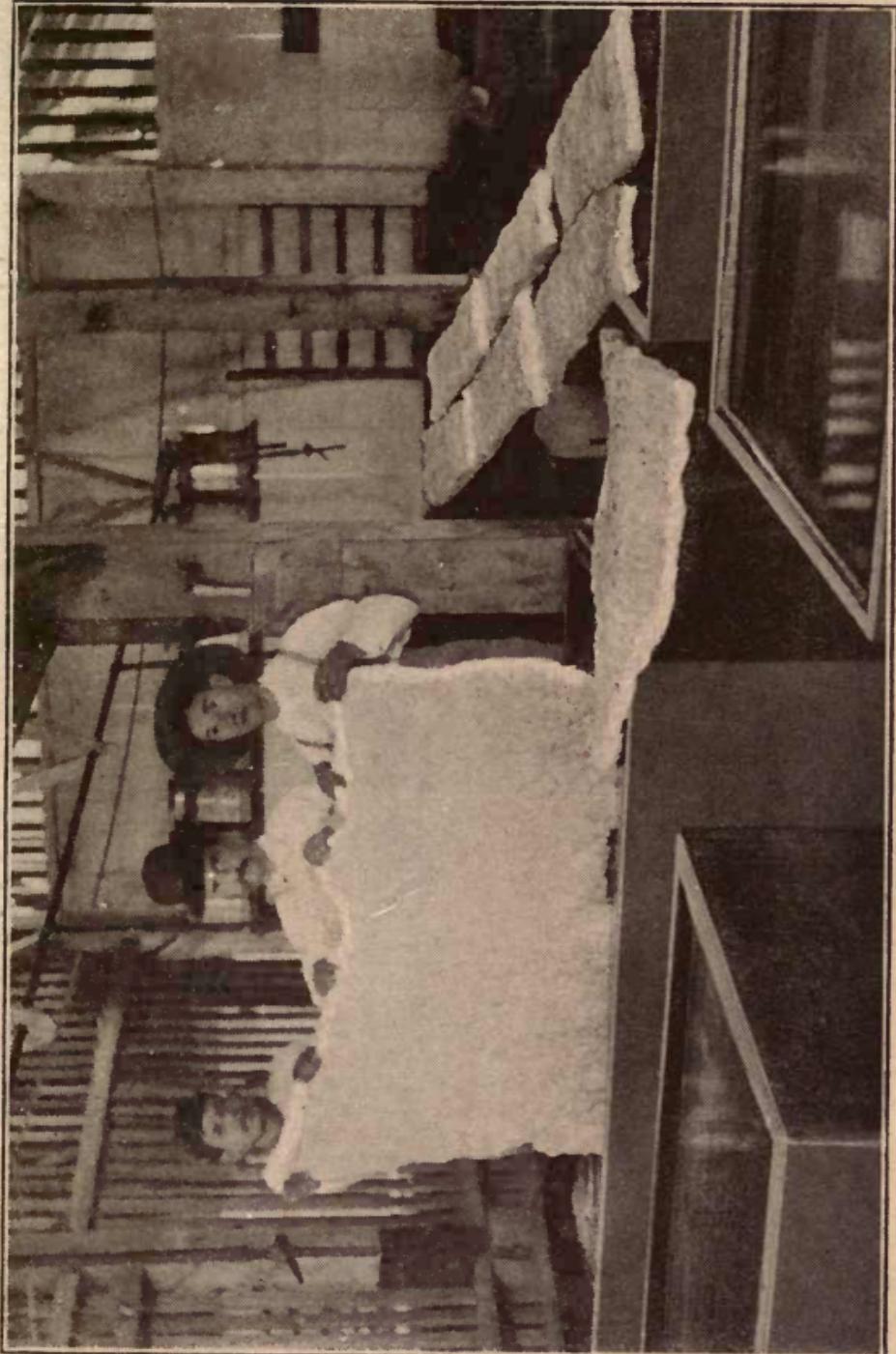
Charles Goodyear experimented with rubber for many years, trying to find some satisfactory way of preparation for manufacturing purposes. In 1838 he accidentally struck a handful of rubber and sulphur against the hot surface of a kitchen stove, and realized that the problem of Vulcanizing had been solved.

The story of Goodyear's determined effort to perfect his process of Vulcanization is one of the most impressive things in the history of invention and discovery. Year after year, at the cost of all he possessed in the world, without profit, without success, alternately ridiculed and condemned by his family and friends, he sought to discover what he felt sure existed, a treatment which would render crude rubber less sensitive to heat and cold, and make it a suitable material for manufacture into the various useful articles which require a resilient, or *springy*, material. To-day Vulcanized Rubber, the material produced by his perfected process, is the basis of over 2,000 established and useful branches of manufacture. The young student of Biography will not find, in its whole range, a more striking example of the great results that flow from unfaltering perseverance under difficulty.

The secret discovered by Goodyear was that rubber, with a slight admixture of sulphur, and subjected to a temperature of from 230 to



Huleros returning from their morning's task. The cans at their feet hold five gallons of Latex each, and the workman fills a can in the half day—La Zucualpa Rubber Plantation



Slab of Rubber
lifted out of a
coagulating vat.
This is the
product of twelve
five-gallons cans
of Latex, and
when dry will
weigh ninety-six
pounds—eight
pounds to each
five gallons of
Latex—

La Zacualpa
Rubber
Plantation

The same men who
created La
Zacualpa Rubber
Plantation are now
developing Los
TOCAYOS RUBBER
PLANTATION, which
adjoins
La Zacualpa

270 degrees; Fahrenheit, becomes pliable, soft and tough: or, if the amount of sulphur be increased, of a horny consistency and compressible with great difficulty.

Until it has been Vulcanized, rubber is so sensitive to heat and cold as to be practically valueless—in summer heat it becomes soft and sticky; while winter's cold renders it brittle and unelastic.

RUBBER

WHAT IT IS AND HOW IT GROWS

This little book has been prepared especially for Schools, and is now used by Teachers in all parts of the country. It will be furnished free to Teachers making application.

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